

# Overview of MEITNER Resource Team

Presented to: MEITNER Kickoff Meeting  
December 11-12, Charlotte, NC

Presented by: Matthew Jessee, Ph.D.  
Resource Team Principal Investigator

# Meet the Resource Team



**Principal Investigator**  
*Matthew Jessee*  
(ORNL)



**Deputy Principal Investigator**  
*Temi Taiwo*  
(ANL)



**SME Lead**  
*Steve Zinkle*  
(UT-K)



**M&S Lead**  
*TK Kim*  
(ANL)

## Techno-Economic Analysis Team

*Eric Ingersoll  
Kirsty Gogan  
Andrew Foss  
John Herter*  
(Lucid Catalyst)

*Jason Quinn*  
(CSU)

Enhance Design Teams' capacity through access to subject matter experts (SME), high-fidelity modeling and simulation (M&S) tools, and techno-economic analysis (TEA)

## Advisors

*Kord Smith (MIT)  
Jess Gehin (INL)*

## DOE Lab Leads

*Jim Wolf (INL)  
Topher Matthews (LANL)*

## Design Team Points of Contact (POCs)

*Lou Qualls (ORNL) : UIUC, Moltex  
Topher Matthews (LANL) : WEC  
Rick Vilim (ANL) : NCSU  
Jim Sienicki (ANL) : HolosGen  
Bob Salko (ORNL) : Yellowstone Energy  
Justin Coleman (INL) : SUNY/Buffalo*

DOE Lab, University, and Industry Subject Matter Experts  
M&S Codes and DOE Computing Centers  
Access to Experimental Facilities

# M&S: Providing access to codes, computing centers, and expert analysts and users

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- ▶ Codes, codes, codes ... which ones? why? how? who? \$? OS?
- ▶ The Resource Team can help navigate
  - Code(s) selection
  - Simulation support (model developers, analysts, running on DOE clusters)
- ▶ Code summary provided at [meitner.ornl.gov](http://meitner.ornl.gov)
- ▶ Primary function is to use or couple existing codes, but minor updates are acceptable
- ▶ Coordinating high-fidelity modeling and simulation development needs with DOE/NE



# M&S: Providing access to codes, computing centers, and expert analysts and users

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Planned Activities (just a few ...)

- ▶ **NCSU NAMAC**: RNN Training simulations on INL Falcon computational cluster
- ▶ **WEC**: Establish coupled thermal, structural, neutronics multiphysics toolset for eVinci reactor analysis
- ▶ **SUNY/Buffalo**: Enhancing MASTADON seismic analysis code for seismic isolator analysis
- ▶ **Yellowstone**: Enhancing CTF sub-channel code for MNSR design
- ▶ **HolosGen**: Perform shielding design and integrated gas Brayton Cycle and thermal-hydraulic analyses
- ▶ **Moltex**: Perform reactor safety analyses to explore safety implications of RECC (Rigid-Elastic Composite Civil-works) technology (under discussion)

# SME: Aligning Design Teams with technical experts

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- ▶ The Resource Team coordinating SME engagement with each design team
- ▶ Planned Activities (just a few ...)
  - **Yellowstone**
    - Experimental testing of reactivity control device
    - Mercury life cycle analysis
  - **UIUC**
    - Production of FLiNaK Salt for UIUC Experiments
  - **NCSU**
    - Leverage ANL expertise in operation and design of EBR-II
  - **All**
    - Expert review of conceptual design and analysis plan

# Techno Economic Analysis

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## Planned Activities (just a few ...)

- ▶ Nuclear Load Following Study (LucidCatalyst) – quantify earning potential through flexible power output
- ▶ Design Team Specific TEA: Develop data-driven analytical frameworks to guide technical decision-making, credibly articulate research impacts:
  - **SUNY/Buffalo** – establish modern data set for OCC as a function of design-basis shaking
  - **Yellowstone Energy** – Bottom-up plant cost analysis of MNSR for guiding future R&D activities
  - Technology-specific TEA support to other design teams (precise scope still taking shape)
  - Emergency planning zone analysis for several Design Teams

# Some Rules of Engagement

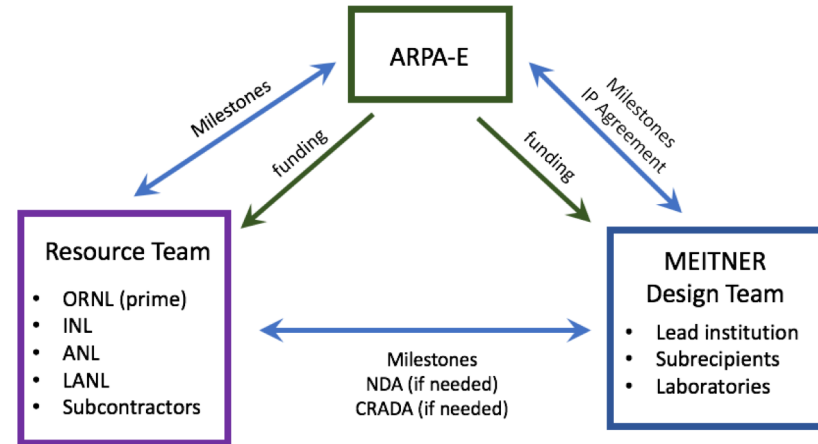
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- ▶ **Talk with your POC regularly.** The POC can help navigate:
  - SME engagement
    - RT members can support multiple Design Teams
    - RT member is excluded from being on a Design Team, even if they provide resources unrelated to their Design Team needs
  - Change in scope or extent of resources required
  - New opportunities
  
- ▶ **Other means:**
  - Use **Slack**: [meitner-rt.slack.com](https://meitner-rt.slack.com) to communicate with resource team members or for collaboration (no firewall!)
    - email [jesseema@ornl.gov](mailto:jesseema@ornl.gov) for invite
  - [meitner.ornl.gov](https://meitner.ornl.gov)

# Some Rules of Engagement

## ► Be Cognizant of Export Control Regulations (10 CFR 810)

- Each institution is responsible for compliance



## ► Setup appropriate NDA or CRADA agreements

- Be aware that working with the Resource Team is separate from existing IP agreement with ARPA-E
- If proprietary information protection only, then NDA (RT will draft)
- If data generated by RT needs protection, then CRADA (RT has a template)
- If neither, then yay!



# Moving Forward

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- ▶ The Resource Team provides additional resources to the design teams to support your milestones and design concept
- ▶ We have a \$10M budget to support the various teams
- ▶ Use your POC